Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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UAVs "Help from Above"

SPECIAL ISSUE!

Flightfax
ARMY AVIATION RISK-MANAGEMENT INFORMATION

U.S. ARMY SAFETY CENTER


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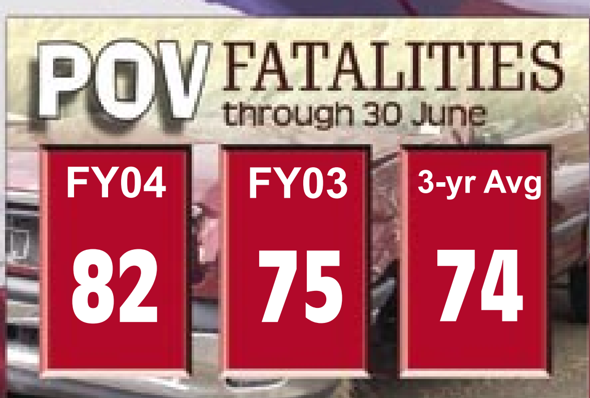

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Joe Smith

JOSEPH A. SMITH
Brigadier General, U.S. Army
Commanding

DASAF's Corner
FROM THE DIRECTOR OF ARMY SAFETY

Make It Personal … Because It Is!

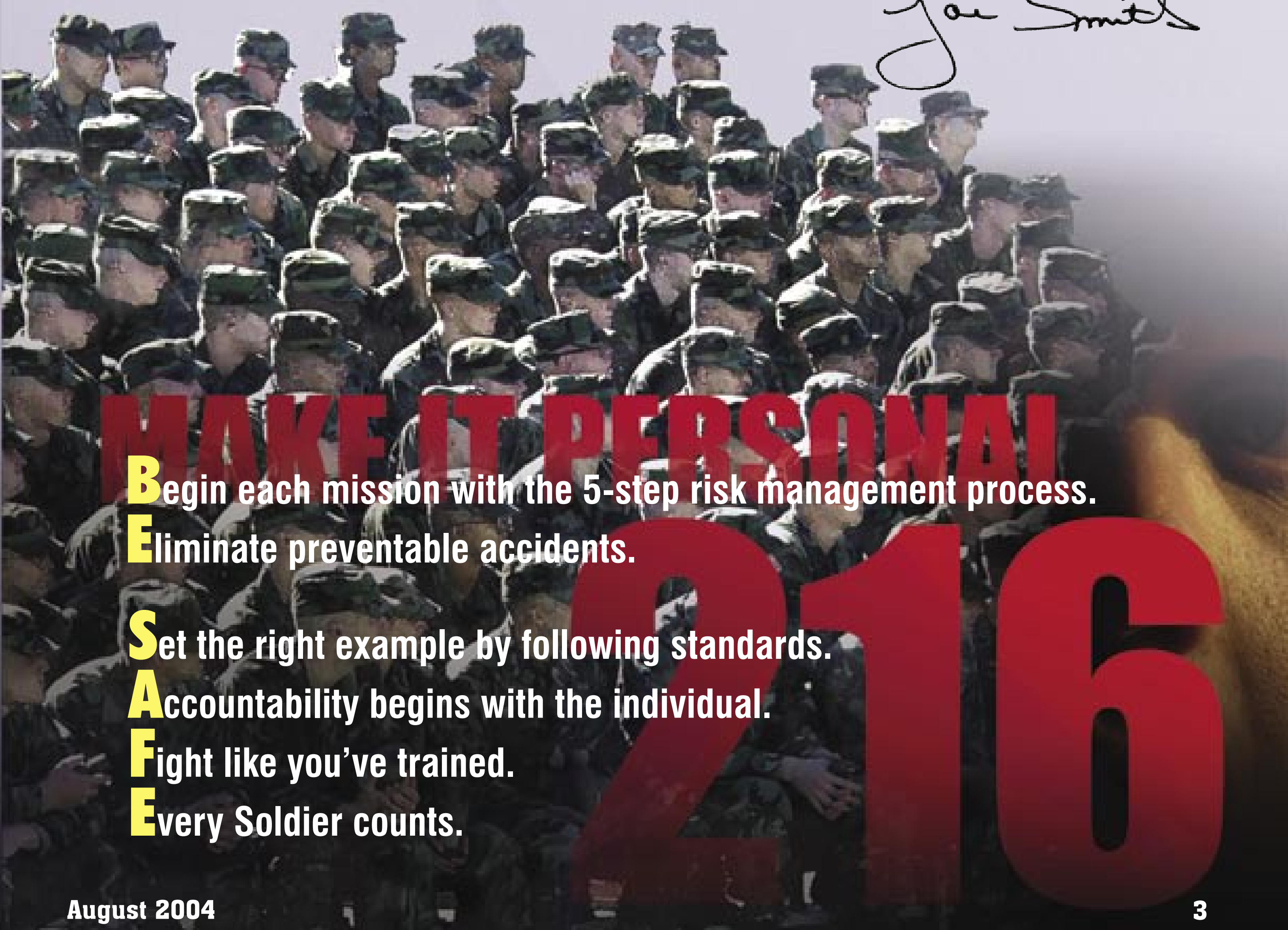
A picture is worth a thousand words. The image below represents the blank faces of the 216 Soldiers we've already lost to accidents this year, most of them preventable. These men and women—America's sons and daughters—were once in our formations serving our great Nation. Now they're gone.

Over the last 90 days, a name has been added to this growing list of needless deaths every 34 hours. Was one of the 216 Soldiers a personal loss to you? If not, then these numbers are just statistics … blank faces; not lessons learned, but lessons noted. I challenge you to actively learn from other's mistakes and successes.

Don't add your name to this roll call, the same goes for your battle buddy—you're both irreplaceable. When leaders are in charge, they take charge. Do the harder right and make a difference—BE SAFE! Make it personal … because it is!

Our Army at War: Be Safe! Make It Home.

Joe Smith



ARMY UAVS—A Systems Update

COL Jeffrey T. Kappenman
TSM-UAVS
Fort Rucker, AL

As Army Aviation reshapes to meet the needs of the field as we fight the Global War on Terrorism, there is no better place to start than at the Army Aviation Warfighting Center. Another milestone for Army Aviation occurred 30 June 2003, as formal proponency of the Army's Unmanned Aerial Vehicle Systems (UAVS) was transferred from the U.S. Army Intelligence Center at Fort Huachuca, AZ, to the U.S. Army Aviation Center (USAAVNC) at Fort Rucker, AL. The transfer continued to progress on 1 July 2004, with the assumption of charter by the Training and Doctrine Command System Manager-UAVS (TSM-UAVS) at Fort Rucker.

Proponency for UAVS was transferred to Fort Rucker with the evolution of roles for unmanned aerial platforms on the battlefield. Traditional UAVS missions of reconnaissance and surveillance are expanding and more closely resemble Army Aviation's core competencies of close combat, mobile strike, vertical maneuver, reconnaissance, aerial sustainment, and security. With the USAAVNC's knowledge of manned aerial platforms, Army leadership decided it was a natural progression to leverage that knowledge to the unmanned force. This unification of manned and unmanned aviation under a single branch provides the most effective and efficient method for managing the development of UAVS for current and future forces.

Army Aviation continues to recognize the advantages of UAVS in stability and support operations in Iraq. During major combat operations, Soldiers have been in the field fighting our Nation's Global War on Terrorism (GWOT) with the Hunter, Shadow, and Raven systems. In particular, the Shadow was employed in support of selected brigades, while the Hunter provided support to V Corps and its divisions. The Hunter also provided surveillance for the 3ID during its move north to Baghdad.

The Hunter has the longest lineage of any UAV, having served the Army since 1991. There are three Hunter companies that have served in the GWOT. Each company is comprised of six aerial vehicles organized under the aerial exploitation battalions. These companies have all supported Operation Iraqi Freedom (OIF), flying more than 4,400 hours.

The Shadow system started its service in 2001. Current procurement plans provide for a total of 41 systems through 2007. The Shadow platoon has four air vehicles and serves under the maneuver brigades to support their operations. Six Shadow platoons have served in OIF, amassing more than 6,000 hours.

The newest UAVS is the Raven, which is a company- and platoon-level system. The Raven is deployed by a dismounted Soldier to assist the unit's situational awareness within 8 kilometers of the receiver. A total of 185 Raven systems will be fielded by December 2004. The program manager currently is providing system training to units in theater.

The Army has conducted numerous efforts in the past year to improve the capabilities and reduce the accident rates of UAVS. In February 2004, USAAVNC conducted a functional area assessment (FAA) to assess the UAVS program, prioritize funding decisions, and develop the way ahead. The FAA conducted a holistic look across the domains of Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities (DOTML-PF), Safety and Standardization spectrum. This FAA provided USAAVNC proponents a baseline for actions that must be taken to improve UAVS unit capabilities.

The GWOT provided another opportunity to assess DOTML-PF. In early 2004, the Army G3 directed an operational assessment (OA) of UAVS in OIF and Operation Enduring Freedom (OEF). A team representing various DOTML-PF elements was organized and led by MAJ James Brashear and supported by the Army's Operational Test Command. Due to security concerns, the team did not deploy to OIF/OEF but was able to question redeployed Shadow and Hunter units in theater. The data collected from the OA will be used to support senior Army decision-making regarding future requirements, operational employment, acquisition, and resourcing.

In May 2004, an Army Aviation Safety Investment Strategy Team (ASIST) for UAVS hazards control working group convened. Representatives gathered at the U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, to identify hazards and controls from the reading and analysis of 59 UAVS accident reports. Identified UAVS hazards, preliminary associated controls, and other relevant information were loaded into a database. This database will contribute to deficiencies in design, as well as shortcomings in training and standardization.

These are but a few of the efforts underway to improve UAVS for the future and integrate manned and unmanned aviation under a single proponent. The future will bring the capabilities UAVS have to offer to more and more proponents and commands within the Army. UAVS will continue to do the dull, dirty, and dangerous missions, and will be critical for success from the platoon to the unit of employment. Mission capabilities will only increase as additional payload capabilities are developed for mine detection, communications relay, and weaponization.

The expanded capabilities that UAVS bring to the fight will provide support for all branches. As the proponent for the Army UAVS program, Aviation will now lead the development and integration of manned and unmanned aviation throughout the Army and the joint environment. ♦

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UAVs—OIF Guardian Angels

CPT Kevin L. Fittz
with
CW2 Jonathan H. Daniels

MAJ Zike, Regimental Fire Support Officer for the 2nd Armored Cavalry Regiment (2ACR), could hardly hide his excitement when he told the unmanned aerial vehicle (UAV) company commander the plan for the next day. "Your Soldiers located ambush sites and an anti-aircraft artillery gun emplacement today," he said. "So here's the plan. Tomorrow we're going to make a feint like we're headed into town while your Hunter system watches from overhead. When the ambush positions fill with insurgents and the triple-A gun is manned, the AC-130 gunship that we'll have overhead will engage the threat while our troops stand off and wait to clean up what's left!" He added, "It's a good thing we postponed that patrol and waited until the Hunter checked out the area before we went in. Without a doubt, your team saved both lives and equipment."

Finding and reducing the threat

The 3-505th Parachute Infantry Regiment conducted a raid on a suspected insurgent safe house in the early morning hours of a near pitch-black night. When the paratroopers entered the house from the front, two suspects darted out the rear of the house, ran to the tree line behind it, and deposited a satchel of weapons and ammunition. Once the satchel was hidden, the two suspected insurgents ran back to the house and joined the other members of the household undergoing search and questioning. During any other raid, the satchel would've stayed hidden in the dark foliage, under cover of the dark night and camouflaged against like-colored ground. During any other raid, the members of the house couldn't be detained for lack of evidence.

But this raid was different. The paratroopers received radio transmissions from their higher headquarters that a Hunter UAV overhead had spotted the suspects and could guide the Soldiers in on the weapons. Following radio direction from the higher headquarters, the Soldiers walked right past the satchel three times, even though they were using the latest in night vision devices. Finally, on their fourth attempt, the Soldiers found the satchel and its contents, ensuring at least two of the suspects went into custody with both film and hard evidence of their attempt to hide their lethal tools.

These are just two examples of what the Soldiers of Alpha Company, 1st Military Intelligence Battalion (A/1MI) are doing to support the Soldiers and Marines risking their lives daily to put policy into practice on the ground in Iraq. A/1MI has provided first-responder coverage of downed AH-64s, adjusted aerial fires for AH-64s in Fallujah, and provided screening coverage of raid, cordon and search, and convoy operations all over Iraq. The Hunter UAV has teamed with artillery, attack and scout aviation, Special Forces, Air Force close air support, armored cavalry, airborne infantry, and Stryker and heavy mechanized units to take the fight to the enemy. Hunter UAVs have flown counter-battery, radar-calculated back azimuths to the source of a rocket or mortar attack, found the enemy combatants, followed them silently from above as they made their way to their house, and remained overhead until a raid could be mounted.

All told, in the first 5 months of operations in Iraq, A/1MI directly contributed to the elimination of over 500 anti-coalition forces, the capture of over 200 suspected enemies, and the reduction of equivalent numbers of weapons systems. A/1MI UAVs also witnessed and tailed a kidnapping, monitored the movements of individuals on the high value target list, confirmed or denied other sources of intelligence, and performed interdiction operations against cross-border movements, arms smuggling, fuel smuggling, and improvised explosive device (IED) emplacement.

As of June 2004, A/1MI was in its first 8 months of operational existence, having integrated the General Atomics-operated, theater-contracted I-Gnat system into the unit a little over 2 months after setting up in Iraq. The company trained with the Combat Maneuver Training Center (CMTC) in Hohenfels, Germany (which is also the location of the company headquarters), and then trained the Soldiers' payload skills in Kuwait with the help of a CMTC aero scout observer/controller. Following close quarter marksmanship and convoy live-fire training, the unit convoyed up into Iraq and established its mission support capability within 2 days of arrival.

The RQ-5A Hunter is a tandem-engine, tandem-propeller air vehicle, and the RQ-1L Improved Gnat (I-Gnat) is the Army's version of the Air Force Predator on a non-satellite tether. Both UAVs are medium-range, corps-level reconnaissance, surveillance, and targeting acquisition (RSTA) assets. Company-trained data exploiters from A/1MI, 303MI, and 502MI

UAV landing with two external pilots in the foreground: SPC Robert Whites, 96U External Pilot (left) and Mr. John Hench, Northrop-Grumman External Pilot (right).

This C-130 is shown taking off in front of an RQ-5A Hunter and crew. The crew is waiting to take the runway for takeoff.

This long, dark gray UAV is the RQ-1L I-Gnat.

report on the video feed over SIPR chat and broadcast live, full-motion video out over the Global Broadcast System (GBS), posting mission products to a SIPR Web site at the end of each mission. The small company of 48 Soldiers has split-based and split-sited as necessary to provide more than 16 hours a day of Hunter support from two locations and 12 hours a day of I-Gnat support over a combined area that covers up to two-thirds of Iraq.

Requirements managers who task the UAV as an RSTA system, viewing its capabilities operationally and tying it into an existing ground operation, are successful. Managers who view the UAV as an extremely low-orbit imagery satellite aren't nearly as successful, as proven by 5 months of covering fields, power lines, and rooftops nightly without catching a single rocket or mortar in the act of firing on a U.S. installation or concern. Both 82nd Infantry Division (Airborne) and 2ACR collection managers (CMs) understood and applied the operational capabilities of the UAV well. Their CMs provided A/1MI with operational graphics for every mission possible, allowing our UAV operators to plan and conduct reconnaissance missions with the knowledge of exactly what they needed to do to support the mission.

The Hunter and I-Gnat systems give the war planners and warfighters in Iraq the ability to see the battlefield and share the same view with all who are able to access SIPR chat, the GBS, and/or a SIPR Web site. UAVs shape the fight by providing the leaders who prosecute the fight with a near real time, full-motion picture of the ground situation. To the coalition warfighter on the ground who didn't activate an IED because it wasn't successfully emplaced, didn't drive into an ambush because it no longer existed, didn't contend with anti-coalition force weaponry because it was either captured or destroyed, or who was found when lost or wounded, the UAV overhead is simply a guardian angel. ♦

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Standardizing UAV Operations

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Standardization, as we have come to know it in the manned aviation community, is in its infancy in unmanned aviation. This primarily is due to the rapid fielding of systems, which outpaced development of safety and standardization programs.

Unmanned aerial vehicle (UAV) standardization is being trained at the schoolhouse in Fort Huachuca, AZ. However, this training is being conducted without a formal instructor pilot (IP) course. Currently UAV IP candidates are selected on the basis of demonstrated skill and experience. IP candidates are then given additional instruction on implementation of the aircrew training program (ATP). This instruction includes a review of Training Circular (TC) 1-210, *Commander's Guide to Individual and Crew Standardization*; TC 34-212, *UAV Aircrew Training Manual*; and Army Regulation 95-23, *Unmanned Aerial Vehicle Flight Regulations*.

At the unit level, the UAV commander appoints those personnel most qualified and proficient as the unit IPs. The UAV operators maintain individual flight records folders (IFRFs) and individual aircrew training folders just like the manned community and use standard DA Forms 7120, 7122, and 4507. Consider for a moment the difficulties we have in the manned community with properly maintaining forms and records. Now imagine the same problems in the unmanned community, only without the benefit of years of institutional knowledge and experience.

UAV units also do not have an organic flight operations section. This leaves maintenance of IFRFs to the unit's IP. This obstacle can be overcome somewhat in Shadow units if the installation flight operations section is willing to assist. Hunter units tend to have a little less difficulty due to their association with aerial exploitation battalions.

What does the future hold for UAV standardization? Beginning in Fiscal Year 2005, a formal IP course will be held at Fort Huachuca. The academics involved will reflect much of the same material taught in U.S. Army Aviation Center (USAAVNC) IP courses. To some degree, the course may put more emphasis on ATP management than the USAAVNC courses.

Another step toward UAV standardization will happen through assistance visits to fielded units, as well as units undergoing fielding. The Directorate of Evaluation and Standardization (DES), in conjunction with the Program Manager (PM)-TUAV, will send a team to monitor and assist in the training of unit IPs and provide subject matter expertise to lay a solid foundation for a successful standardization program.

However, the real key to a successful program is a knowledgeable and supportive chain of command. Training and familiarization of ATPs at all levels of UAV command is required. This learning process will involve training at the service schools of UAV commanders. Until then, the interim solution is for DES to provide familiarization training and assistance to UAV commanders.

In closing, I make this request to aviation standardization officers: Look around you. Is there a UAV unit near you? If so, seek them out and lend them a hand in the development and maintenance of their ATPs. Not only is it in your interest—after all, they are sharing your airspace—but it's in the best interest of our Army. Just like their manned counterparts, UAV units must safely and successfully complete their missions. ♦

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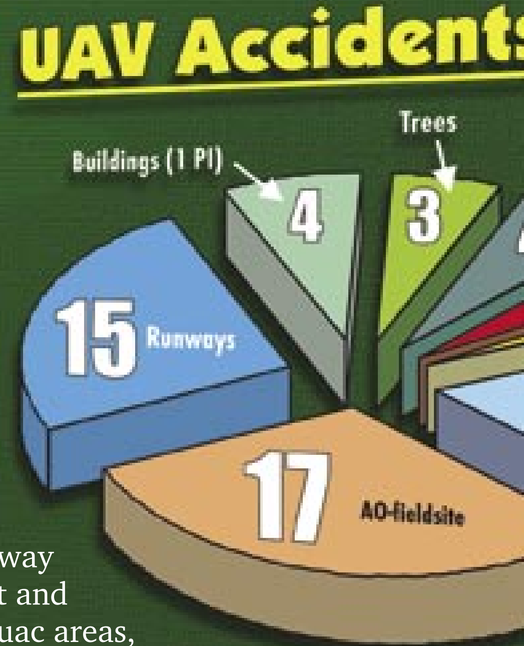
UAV Risk Management

Bob Giffin
U.S. Army Safety Center



With the current high level of publicity for unmanned aerial vehicle (UAV) tactics in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), one might think that UAVs have just arrived on the scene. The truth is that UAVs have been around since the Vietnam War.

Between 1976 and 2003, 56 UAV accidents were reported. You can see the breakdown by looking at the pie chart. The majority of these UAVs crashed into the training areas of operation. Losses are attributed to weather, maintenance, mechanical malfunction, and operator error.

The second largest group of accidents occurred while operating in and around the recovery launch site (RLS). Regrettably, there have been two personal injuries associated with operating UAVs in and around the RLS. The first one occurred when a UAV was accidentally flown into a maintenance building, startling an employee who fell and broke his hip. The other occurred when a crew chief accidentally placed her hand into the operating arc of the propeller, receiving minor injuries to her fingers. Another incident occurred when a UAV flew into a crowd of spectators at the edge of a landing strip; fortunately, no one was injured.

The sample risk management worksheets located on the next page are intended for UAV commanders to consider when setting up an RLS. The single largest concern is for the welfare of Soldiers who are working in or around the RLS. The launcher should be set up to point generally into the wind and away from any equipment and cantonment or bivouac areas, therefore decreasing the probability of an errant UAV crashing into personnel or other equipment. The same holds true for the recovery efforts; non-essential personnel should maintain a safe distance away (minimum of 50 meters) from the RLS area.

Takeoff, landing, or low altitude operations of UAVs can be practiced on the mission simulator. Simulator training should be conducted on a routine basis. Periods of downtime or actual non-flying activities could be utilized by having the operators practice emergency-type procedures on the simulator. This can also assist with the currency problem that is plaguing the field, or perhaps when weather conditions are not optimal to allow flight operations.

Commanders, platoon leaders and sergeants, operators, and crew chiefs must follow specified training and checklists by the book. The key to a successful launch and recovery is to follow the standards already established and don't get distracted or in a hurry to accomplish the mission.

The Army has stepped up production of new UAVs to meet the demands of battlefield

commanders. With this comes the realization of the tremendous value that UAVs provide the warfighter—reduced risk of human casualties. ♦

Editor's note: *Further recommended reading is the USAARL report, "The Role of Human Causal Factors in U.S. Army Unmanned Aerial Vehicle Accidents," located at* ***http://www.usaarl.army.mil/TechReports/2004-11.PDF****. A condensed version of the report follows this article.*

U.S. ARMY SAFETY CENTER Risk Management Worksheet

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MSN/TASK: Conduct UAV Flight & Recovery	DTG Begin: End:	Date:

HAZARDS	INITIAL RISK LEVEL	CONTROLS	RESIDUAL RISK LEVEL	DECISION MATRIX	HOW TO IMPLEMENT	WHO WILL SUPERVISE	CENTRAL EFFECTIVE YES/NO
Crash on takeoff into personnel or structures:	M (II-D)	• Orient launcher pointed away from cantonment areas & bivouac sites.	L (II-E)	Co	• Inform AVOs & crew chiefs to pay attention to detail. • Ensure by-the-book procedures are followed. • Ensure launcher is placed correctly. • Practice emergency procedures on simulator. • Ensure only mission crews are located on the runway as required.	• Company commander. • Platoon leader. • Platoon Sgt.. • Mission Cdr.	
Crash during recovery or landing operations into personnel or structures.	M (II-D)	• Orient the RLS away from cantonment or bivouac areas. • Ensure both sides of the runway are free from obstacles, vehicles & personnel in the touchdown area or beyond. • Comply with checklist procedures. • Review emergency procedures. • Practice emergency procedures on simulator.	L (II-E)	Co	• Inform AVOs & crew chiefs to pay attention to detail. • Use by-the-book operations.	• Company commander. • Platoon leader. • Platoon Sgt. • Mission Cdr.	

U.S. ARMY SAFETY CENTER Risk Management Worksheet

Page 2 of 2

MSN/TASK: Conduct UAV Flight & Recovery	DTG Begin: End:	Date:

HAZARDS	INITIAL RISK LEVEL	CONTROLS	RESIDUAL RISK LEVEL	DECISION MATRIX	HOW TO IMPLEMENT	WHO WILL SUPERVISE	CENTRAL EFFECTIVE YES/NO
Crash onto the runway or recovery area.	M (II-D)	• Ensure non-essential personnel are clear of the intended landing area. Maintain at least 50 meters away from the designated landing area.	L (II-E)	Co	• Mission Cdr/Plt. SGT/Plt SGT must ensure that the landing area is cleared of all non-essential personnel prior to bringing the aerial vehicle into the landing pattern. • Ensure runway or landing area is set up IAW TM. • Practice emergency procedures on simulator. • Ensure an area is designated for VIPs & other personnel.	• Company commander. • Platoon leader. • Platoon Sgt.	

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Note: This risk assessment tool is not intended to provide all hazards, risks, and controls for UAV missions. It is provided as a useful tool containing examples to be used during planning and executing of those missions.

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Human Factors in UAV Accidents

Patricia LeDuc, USAARL
and
Sharon Manning, USAABSO

The expanded use of unmanned aerial vehicles (UAVs) in Afghanistan and Iraq has brought them into the public spotlight. Advocates for UAVs cite a number of distinct advantages over manned aircraft. These advantages include:

- Reduced or eliminated human loss.
- Lowered initial system development costs.
- Lowered replacement costs.
- Lowered operator training investment.
- Expanded mission time.
- Reduced detection signature and vulnerability.
- The ability to operate in nuclear, biological, and chemical environments.
- Reduced peacetime support and maintenance costs.

The Army currently fields two major UAV systems: The RQ-7 Shadow and the RQ-5 Hunter. The Shadow is a small (9 feet in length), lightweight (330 pounds), short-range surveillance UAV used by ground commanders for day and night reconnaissance, surveillance, target acquisition, and battle damage assessment. Capable of operating at altitudes of 14,000 feet, the Shadow can carry instrument payloads of up to 60 pounds. The Hunter is a twin-engine, short-range, tactical UAV that provides capability for an increased payload (200 pounds) and endurance period (up to 12 hours). It weighs 1,600 pounds and has a 29-foot wingspan.

While UAVs offer multiple advantages, they do have some disadvantages. Many are low flying and have slow ground speeds, making them easy targets for enemy ground forces. Remotely piloted UAVs require a complex and highly reliable communication link to the control station, and operators must make decisions based on sometimes-limited sensor information accompanied by a built-in signal delay. Automating some functions within a UAV control system may overcome certain remote operation disadvantages, but removing the man from the cockpit reduces the ability to make rapid decisions with maximum situational awareness.

Naturally, the increase in UAV use has been accompanied by an increased frequency of accidents. As mechanical failures decrease with the maturation of UAV technology, human error will account for a higher percentage of accidents. Knowledge of the human-related causal factors in UAV accidents can be used to suggest improvements in areas such as current flight training methods, crew coordination measures, and operational standards.

The predominant means of investigating the causal role of human error in all accidents is the analysis of post-accident data. From Fiscal Year 1995 to 2003, a total of 56 UAV accidents were recorded. The application of both the Human Factors Accident Classification System (HFACS) and the DA Pam 385-40 approach identified 18 accidents (32 percent) as involving human error. While no single factor was responsible for all UAV accidents, both methods of analysis identified individual unsafe acts or failures as the most common human-related causal factor category (present in 61 percent of the 18 human error-related accidents).

Within the major HFACS category of "unsafe acts," four subcategories were identified: skill-based errors, decision errors, perceptual errors, and violations. The most common unsafe act was a decision error, present in 11 percent of all UAV accidents and 33 percent of all human error UAV accidents. Examples of decision errors include (a) when the external pilot hurried turns using steep angles of bank and prevented a proper climb rate, resulting in a crash; and (b) when the wrong response to an emergency situation was made by commanding idle power after the arresting hook caught on the arresting cable. The single accident categorized as "preconditions for unsafe acts" was further identified as a crew resource management issue.

Based on the DA Pam 385-40 classifications, the most represented Army failure was "individual failure" (20 percent). The second most prevalent failure category was "standards failure" (14 percent). When just the 18 accidents involving human error are considered, individual failure was present in 61 percent, and standards failure was present in 44 percent. "Leader failure," "training failure," and "support failure" were present in 33 percent, 22 percent, and 6 percent of the human error accidents, respectively.

Incidents of individual failure included (a) the operator misjudged wind conditions during landing; and (b) crewmembers overlooked an improperly set switch on the control box. Incidents of leader failure included (a) a crewmember who did not have a current certification of qualification was assigned as an instructor pilot; and (b) leadership failed to provide oversight of placing the UAV in a tent and having the tent properly secured. Incidents of training failure included (a) training was not provided to the UAV operator on effects of wind; and (b) training was not provided on single engine failure emergency procedures.

There was only one incident of support failure, which involved a contractor that did not take appropriate maintenance actions even though information was available. Incidents of standards failure included (a) written checklist procedures for control transfers were not established in the technical manual; and (b) there was no written guidance on inspection and replacement criteria for the clutch assembly.

As seen in virtually all types of accidents, human error plays a significant role in UAV damage and loss. Post-accident data analysis can provide a starting point for the design, examination, and adoption of appropriate countermeasures. While no single human factor was responsible for all accidents, these findings suggest there is a need to further develop and refine UAV training and safety programs that target individual mistakes. In demonstrating that human error plays a significant role in UAV accidents—and by identifying the type and prevalence rate of these errors—this study shows the need for emphasis on developing and implementing countermeasures that target human decision-making error. ♦

Editor's Note: *The following article is an excerpt from the U.S. Army Medical Department Journal. The full report may be found online at* ***http://www.usaarl.army.mil/TechReports/2004-11.PDF****.*

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Shadow TUAV Mission Process

CPT Matt T. Gill
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The end-state for all Shadow 200 RQ-7A tactical unmanned aerial vehicle (TUAV) operations is getting the right video to the right user in a timely and accurate manner. TUAV operators and leaders must establish a functional mission process to achieve this end-state. By using the Army's troop leading procedures, the TUAV platoon leader and direct support military intelligence company (DSMICO) can establish a mission process that provides timely, accurate intelligence to the maneuver unit utilizing the Shadow 200 TUAV.

Mission planning for TUAV operations is a complex system that must be maintained and administered on a constant basis. TUAV mission planning is the responsibility of the platoon leader (PL) and must be managed in accordance with the brigade S-2's reconnaissance and surveillance plan. The TUAV mission is a 3-phase process that allows the PL to conduct a plan from receipt of a mission request to production of the post-mission intelligence report.

Phase 1: Mission coordination

Shadow 200 TUAV mission coordination starts at the maneuver unit and is complete when the TUAV C2 element has produced an approved mission order. Planning is conducted between the TUAV C2 cell, division or brigade collection manager, and the requesting unit. End-state for mission coordination is the production of a document that allows the TUAV platoon to begin their internal orders process.

Phase 2: Mission planning

TUAV mission planning, conducted at the PL/platoon warrant officer (PWO) level, is performed in conjunction with the brigade S-2 and is a result of the final brigade targeting process. This phase covers all platoon internal coordination and provides them the ability to perform the requested mission. Mission planning begins with the production of the flight order and ends upon completion of the go/no-go brief.

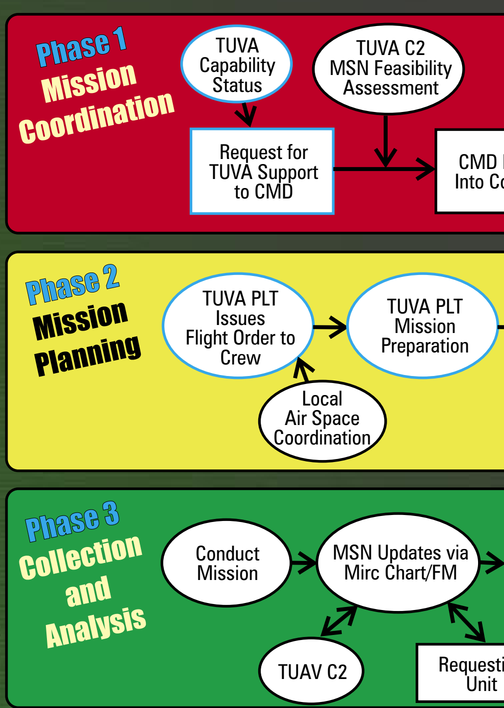
Author's note: *Proper use of time prior to conducting a mission is dependent on the platoon leadership issuing a timely, accurate mission order. See the sample TUAV pre-mission planning cycle on the following page.*

Phase 3: Collection and analysis

The collection and analysis phase is conducted at the flight crew level. Beginning with the launch of the aerial vehicle, the flight crew is in continuous contact via MircChat or FM radio with the maneuver unit and the division or brigade analysis and control element/deployable intelligence support element (ACE/DISE). This phase begins with the launch of the aerial vehicle, and ends when the post-mission intelligence report is published.

Conclusion

Proper mission planning is one of the initial keys to success for any operation, and especially applies to TUAV operations. By developing a functioning process over time, TUAV leaders and operators will be able to prepare and conduct operations that will meet the intent of the supported maneuver unit. One of the most difficult things for



Pre-mission Planning Cycle

Proper use of time prior to conducting a mission is dependent on the platoon leader issuing a timely, accurate mission order.

junior leaders is to combine the military decision making process and troop leading procedures at the small unit level. Only through a systematic planning process will new and technically advanced intelligence assets be properly integrated into the maneuver fight. ♦

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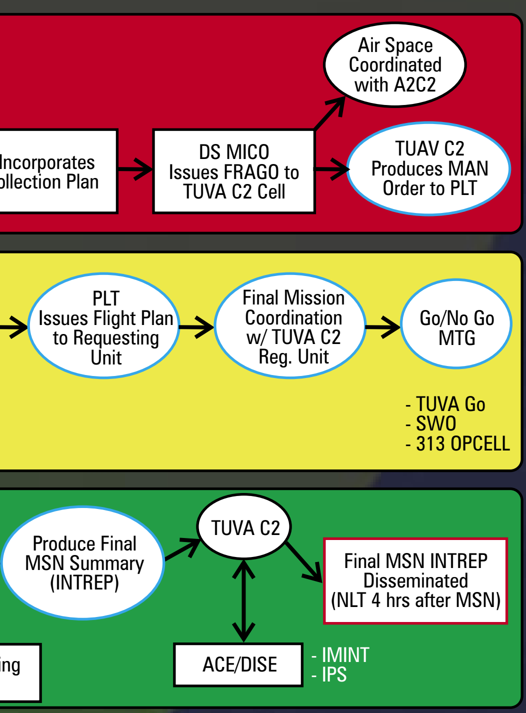


Forward and Launch Site Mission Procedures

FORWARD SITE MISSION PROCEDURES

Time		Action	Who
D-4		**Receipt of Mission**	C2
		Receive mission request from brigade (BDE)	C2
		Plot request in Falcon View to determine feasibility	C2
		Check weather for mission time	C2
		Request/research incident reports or related imagery	C2
		Provide BDE with any recommendations for mission adjustments	C2
		Update mission planner slide with flight times	C2
		Request airspace and identification of friend or foe (IFF) Codes (ACO/ATO)	C2
		Prepare mission target matrix	C2
		Update FRAGO	C2
D-3		Issue FRAGO	C2
D		**Mission Day**	
	T- 2:30	Check ATO/ ACO and published TFRs 2 hours prior to launch	C2
	T- 2:00	Brief MC on mission, provide mission target matrix	C2
	T- 1:50	Establish radio contact with LRS 1½ hours prior to launch	MC
	T- 1:50	Send weather update to LRS via FM or DVNT	MC
	T- 1:45	Brief AVO/MPO on mission	MC
	T- 1:35	Check fuel levels and equipment status	AVO
	T- 1:30	Receive risk assessment (RA) numbers from L/R site combine into decision RA	MC/C2
	T- 1:30	Plot targets in GCS	MPO
	T- 1:00	Prepare INTREP slides	C2
	T- 0:45	Establish contact with BDE in MIRCHAT, provide aerial vehicle (AV) number	MC
	T- 0:25	**Launch**	MC
	T- 0:15	Handoff procedures	MC/AVO
	T Hour	**AV on target**	MC/AVO
		Maintain MIRCHAT communications with BDE during flight	MC
		Post wind speed and temperature at altitude every hour to MIRCHAT	MC
	T+ 3:30	Post mission end time in MIRCHAT 30 prior to off station	MC
	T+ 4:15	Complete mission log/AAR	MC
	T+ 4:30	Update flight records	SP/IP
	T+ 5:00	LRS calls forward site (FS) to update slant/maintenance status	MC
	T+ 5:00	Complete and publish INTREP	C2

LAUNCH SITE MISSION PROCEDURES

Time		Action	Who
D-3		**Receipt of Mission**	C2
		Ensure personnel available for mission	PSG
		Ensure equipment available for mission	PSG
D		**Mission Day**	
	T- 3:00	Brief MC on mission, provide mission target matrix	WO/PSG
	T- 2:50	Mission brief to flight line	MC
	T- 2:40	Check fuel levels and equipment status	MC
	T- 2:30	Plot targets in GCS	MPO
	T- 2:30	Complete PMD of mission AV 2 hours prior to launch	Maint
	T- 2:00	Begin preflight 1½ hours prior to launch	MC
	T- 1:50	Establish radio contact with FS 1½ hours prior to launch, send tail number	MC
	T- 1:50	Receive weather update from FS via FM	MC
	T- 0:55	Call ATC to activate restricted operations zone (ROZ) 30 minutes prior to launch	MC
	T- 0:55	Call FS via FM 30 minutes prior to launch, verify tail number	MC
	T- 0:40	Engine starts 15 minutes prior to launch	MC
	T- 0:35	Call ATC to request permission to launch 10 minutes prior	MC
	T- 0:28	Call FS via FM 3 minutes prior to launch to receive permission to launch	MC
	T- 0:25	**Launch (25 minutes prior to TOT)**	MC
	T- 0:15	Call ATC at 5,000 feet to deactivate ROZ	MC
	T- 0:15	Handoff procedures at 5,000 feet	MC/AVO
	T- 0:15	Monitor flight, be prepared to receive mission	MC/AVO
	T Hour	**AV on target**	AVO
	T+ 4:00	Call TQ tower to activate ROZ 30 minutes prior to recovery	MC
	T+ 4:00	Handoff procedures at end of mission or approx. 9 liters	MC/AVO
	T+ 4:30	Call TQ tower when AV lands to deactivate ROZ	MC
	T+ 5:00	LRS calls FS to update slant/maintenance status	MC
	T+ 5:00	Update flight records	SP/IP
	T+ 5:00	Update mission log/AAR	MC

The Evolving Role of UAVs

Bill Coty
Aerodyne Inc.,
Huntsville, AL

Are unmanned aerial vehicles (UAVs) the future of Army Aviation? Flying in operational Army units for the past 8 years, UAVs help commanders gain situational understanding and shape the modern battlefield. In 1996 Alpha Company, 15th Military Intelligence Battalion, became the Army's first operational unit equipped with the RQ-5A Hunter. Today the Hunter is operational in XVIII, III, and V Corps. The RQ-7 Shadow now can be found in six divisions, and by Fiscal Year 2006 a projected 41 Shadow systems will be in place.

Today's role for Army UAVs is primarily reconnaissance. However, future UAV missions will include operations in nuclear, biological, and chemical detection, logistical resupply, increased communications relay, target recognition, and even attack. These versatile air vehicles are proving their worth every day in operations around the world.

Army UAVs first proved their effectiveness as a combat multiplier during operations in Kosovo. Since then, they have flown numerous operational missions both at home and abroad. Currently UAVs are playing a major role in Operation Iraqi Freedom (OIF). Both the Hunter and Shadow have been operating in Iraq for the past year, flying hundreds of missions and thousands of combat hours.

For you attack and scout pilots, don't worry about your jobs just yet—it'll be a few years before UAVs will completely be doing your job. However, UAVs soon will enhance your situational understanding of the battlefield. At Fort Polk, LA, in August 2000, the Hunter and AH-64D Apache Longbow interfaced for the first time. The Aviation Manned/Unmanned System Technology Demonstration (AMUST-D), as it was called, demonstrated the ability to control a UAV from the Apache cockpit and thus provide the crew with reconnaissance and target information well beyond the range of on-board sensors. The result is increased mission flexibility and the UAV—not you—traveling into harm's way.

As with any system, UAVs have their pros and cons. They can have vast endurance times (resulting in longer time on station without a break in coverage), near real-time imagery, targetable information, and most importantly, the ability to gather intelligence without putting the operator in danger. However, it's often difficult for UAV operators to get the situational awareness or air sense manned aircraft pilots would normally feel.

Viewing UAV imagery is somewhat like looking through a soda straw. The loss of peripheral vision can make searching for targets challenging. Communications also can be very problematic. With today's fielded UAVs, there is no direct communication with air traffic control (ATC) via the UAV. The only way to communicate with ATC is through the ground control station (GCS). Imagine trying to talk with the controlling ATC agency for a UAV that's 150 kilometers away from your GCS. It's not going to happen unless you both have non-line of sight capability.

Disseminating video to the end user is another problem. The best way to push UAV video is through the Global Broadcast System (GBS), which allows anyone with a GBS receiver to obtain the video. However, this requires equipment to transmit the video signal. During OIF, Hunter video was sent through a TRI-Band satellite transmitter, but there was only one TRI-Band system available for UAV use. The more traditional method of video dissemination is via the GCS to a remote video terminal (RVT), which requires the customer to be no further than 50 feet away from the GCS. The RVT is large and somewhat difficult to operate.

These are just a few of the UAV capabilities and limitations I experienced in Iraq. With sustained UAV operations in theater, Soldiers continue to develop new tactics, techniques, and procedures, thus making UAVs more effective every day. Both the Hunter and Shadow have participated in hundreds of operational missions and continue to be a combat multiplier in the Global War on Terrorism. As Army UAVs mature, I believe we will find they play a larger role in all types of missions. ♦

—Bill Coty is currently a UAV Senior Analyst for Aerodyne Inc., Huntsville, AL. He can be contacted at 256-880-4926 or e-mail wcoty@aerodyneinc.com.

"PULL UP!"

Anonymous

"PULL UP!" I heard those words as I grabbed the controls. Our radar altimeter was clicking down into single digits.

We were in the Kuwaiti desert after having been on alert for 2 months. The war had begun, and my commander was eager to get into the fight. The boat finally had arrived with our aircraft, but first we had to complete the sizable task of desert environmental training.

The weather seemed to conspire against us. It soon became apparent that we'd have to get current in night vision goggles (NVGs). Being an instructor pilot with several years' experience, I readily accepted the challenge of an NVG currency evaluation. Time was critical in the desert, and no one had the luxury of two flights.

The drill was routine: take off, make a turn to crosswind, then turn into the downwind leg, and finally perform a quick emergency procedure (EP). I had done it at least a hundred times back home. But I wasn't home, and I dearly missed having trees and hills to use as a height reference.

Because of the weather and dust, a 150-foot traffic pattern had become the norm for us. On some nights even lower altitudes were necessary just to keep something—*anything*—in sight. But that's what the heads-up display (HUD) is for. Height, attitude, and speed—it had never failed me back home.

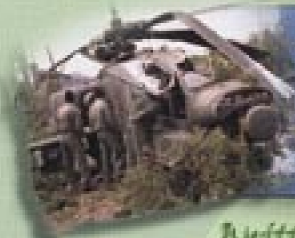
The sand hung heavy in the air the night of my currency flight, creating a curtain of seemingly impenetrable darkness. My pilot was not current in NVGs, and it definitely showed. His takeoff and turns were ok, but the simulated EP taxed him. His focus was no longer on flying. I was trying to help him along when white driving lights on a parallel road illuminated the sandy haze. I lost my beloved HUD! I didn't panic, though. I thought I had a few seconds to reacquire the HUD, as was my experience back home.

But I wasn't at home. The hills, trees, and comfortably high traffic pattern were gone. My washed-out goggle display had gone from an annoyance to a deadly distraction. During the few seconds I spent to regain the HUD imagery, the aircraft had begun a slow, unnoticed descent.

One of our crew chiefs noticed the descent as our altitude decayed. He dutifully announced "check altitude" at the briefed 75-foot training area altitude. However, realizing the rate of descent had cost us precious altitude, he quickly yelled, "PULL UP!" This had never occurred at home!

So, what happened? I was in the desert, but my training and flight techniques were what I'd learned at home. My copilot needed a little time to get back into the mindset of NVG flight and adjust to this new environment. Why didn't I recognize that a task-overloaded copilot, low altitude, and poor visibility spelled trouble? Our saving grace that evening was a well-briefed crew chief. Make sure all your crewmembers are briefed on the conditions you'll be flying in, and take those conditions into consideration when handing out tasks. Fly safe and make it home! ♦

—The author's name was withheld by request. If you would like to publish a story anonymously in *Flightfax*, please call Ms. Paula Allman, Managing Editor, at DSN 558-9855 (334-255-9855) or e-mail paula.allman@safetycenter.army.mil.



Investigators' Forum

Written by accident investigators to provide major lessons learned from recent centralized accident investigations.

Another Victim of Spatial Disorientation

LTC Carroll Dexter
U.S. Army Safety Center

Spatial disorientation has contributed to several recent Army Aviation Class A accidents. The scenarios might be different, but unfortunately the results are the same. At the last moment, the pilots realized their ill-fated predicament but were unable to recover, resulting in a destroyed aircraft. The following mishap illustrates that no community is safe from this aviation hazard.

During a Joint Readiness Training Center rotation, the pilot (PI) (also the air mission commander) in the front seat of an AH-64A received a hasty change of mission. The PI directed the instructor pilot (IP) to enter and select a new single channel ground and air radio system radio frequency to initiate contact with the supported ground elements. The IP initiated a transfer of controls, and the PI accepted the controls after completing a three-way positive transfer. The PI then moved his sight select switch from the target acquisition and designation system position to the night vision system position.

After more than an hour of heads-down searching for targets, this was the first time the PI took the flight controls during the mission. The PI said he developed an overwhelming feeling of descent and saw trees rapidly rising up at him. He pulled the cyclic aft twice, putting the aircraft in a nose-high attitude. The IP rose from a heads-down position and, seeing no horizon, realized the aircraft was descending backwards. He grabbed the flight controls and tried to level the aircraft by pushing forward on the cyclic and raising the collective. The tailboom forcefully struck a tree, which severed the tail rotor driveshaft. The main rotor system disintegrated as it entered the trees. The airframe was damaged extensively, but neither crewmember was seriously injured.

Why did it happen?

The PI was performing target identification duties (i.e., 45 degree heads-down) in excess of an hour by scanning for

targets while zooming from medium to narrow fields of view. The PI raised his head to receive the controls and failed to establish a proper cross-check with both flight symbology and scene content. The PI's fixation on the forward-looking infrared scene content exacerbated the confusion between his vestibular and visual sensory systems. This spatial disorientation gave him a feeling of uncontrolled descent and a nose-low attitude when the aircraft was level. The IP didn't recognize the unusual attitude early enough to prevent the unsafe operation of the aircraft. He wasn't able to recover the aircraft quickly enough from its rearward acceleration and high rate of descent to prevent the accident.

Lessons learned and recommendations

Although the exact reason for the PI's spatial disorientation and the mechanism that triggered it isn't fully understood, it's clear that the disorientation was increased by the PI not using all of the assets available to him. That is, he should have cross-checked the flight symbology to confirm the aircraft attitude. Secondly, the PI should have "cleaned up his cockpit" by ensuring the switches were set and that he was fully oriented before accepting the flight controls.

The IP had confidence in his PI's flight abilities and conducted a radio frequency change with his head down after transferring the controls. While conducting the frequency change, he also should have monitored the PI's actions and aircraft attitude more closely. This would have increased his reaction time available to recover the aircraft in the event his copilot placed it in an unusual attitude. ♦

—LTC Dexter is the USARNG advisor at the U.S. Army Safety Center. He can be reached by calling DSN 558-9864 (334-255-9864) or by e-mail at carroll.dexter@safetycenter.army.mil.

Caveat Emptor, or "Buyer Beware"

CPT Martin Robinette
with
1LT Daniel Squyres

Anyone who receives aviation magazines and catalogs such as *Sporty's* and *King Catalog* knows there is a whole host of commercially available products advertised to make our jobs as aviators easier. Most pilots and crewmembers would agree anything that can reduce workload and/or enhance situational awareness is probably a good thing.

However, as Army Aviators we have to take certain things into consideration when presented with the option of buying that new GPS or other aviation product. While it may be fine for general aviation, can we as Army Aviators use it? This question must be asked not only because of the strict performance requirements of Army Aviation equipment, but also the potential harm or interference that could be caused by using unapproved products.

In recent years there have been several examples of aviators using items not proven to meet military specification requirements. These products include helmet liners, boots, Air Force undergarments, and softer ear pads. Items such as the unauthorized undergarments have contributed significantly to the outcome of accidents. And, in some instances, operators have suffered injury due to an unauthorized device or product.

Even something as seemingly innocuous as an extra seat cushion or softer ear cup can have a profound impact on survivability in a crash sequence. The self-stroking seats used in some of our advanced aircraft are designed to transfer a calculated amount of force to the operator's body. When an unapproved seat cushion interferes with this process, the calculated maximum force can be exceeded with disastrous consequences.

The HGU/56P helmet currently employed in the majority of Army rotary-wing aircraft also is tested to meet specific impact, retention, and noise standards. Replacing the foam lining almost certainly will have a negative effect on the impact and retention features of the helmet. It also can reduce the helmet's acoustic protection. While some features of non-approved products might perform better than military-approved products, others may be inferior. Experience has shown that the risks of using such products outweigh the perceived benefits in a critical situation. None of us wants our equipment to fail when it's needed most. Approved equipment may not always have the fancy flashing lights, glossy surface, or intriguing gadgets, but it has been tested and found to outperform the competition in the most extreme conditions.

The best way to determine if a nonstandard product is safe for Army Aviation operations is to establish if it has an airworthiness release (AWR) or safety of flight (SOF) certification. An AWR is a document produced by the U.S. Army Materiel Command or U.S. Army Aviation and Missile Command and certifies that anything from a helmet to an entire aircraft is safe for aviation operations. An SOF certification serves many of the same purposes; however, it is generally used for non-electrical personal equipment such as kneeboards. It is against regulations to use any nonstandard piece of equipment in or on Army aircraft without an AWR or SOF. This information usually can be found by talking to your ALSE shop or unit aviation safety officer.

The ramifications of using items without an AWR or SOF can be very real and potentially costly. In the event a non-approved item damages an aircraft, a report of survey can be filed against the pilot. In cases where the item is found to have caused the accident, all injuries suffered can be considered “not in the line of duty.” This means the individual Soldier might be responsible for paying for his or her own medical care. There also is the potential for private litigation brought about by injured crewmembers.

Unfortunately, some vendors do little to assist potential buyers. Crewmembers must be cautious when confronted with manufacturers that claim they are an “official supplier to the U.S. military.” The vendor may supply other products to the military, but not the product being advertised. And many products are never specifically referred to as having been approved for Army flight, but give the appearance of approval. Needless to say, many of these items are not approved for Army Aviation.

There are two real hazards when using an unauthorized piece of equipment. The first is that using a commercial product not tested and approved for use in Army aircraft can result in mission endangerment and loss of life. Second, if you are in an accident with an unauthorized piece of equipment, it may be deemed a contributing factor—resulting in disciplinary action and/or a significant financial penalty. Given these facts, the costs decidedly outweigh the benefits. Remember, no matter how cheap or comfortable, the risks just aren’t worth it. ♦

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Letter to the Editor

Dear Editor,

Please publish this in Flightfax. I have witnessed the return of two Army divisions in the last 4 weeks and everything we have heard about watching these returning warriors is very true.

There are two immediately obvious threats: Warriors returning to the American roads after being deprived of automotive freedom, and the same warriors with large amounts of excess cash burning a hole in their wallets.

Regardless of rank or experience level, there seems to be a newfound disregard for traffic laws (especially STOP signs) among our fellow POV pilots. That high-performance screamer motorcycle or hotrod car is suddenly more affordable after a year of tax-exempted combat duty.

You would not believe the parade of high-end BMWs and rocket bikes I saw in traffic going home yesterday. Who can blame them for rewarding themselves?

This is purely an observation, but I cannot encourage everyone enough to watch out for these guys. That flashing red light at the gate is on again and this is only the beginning of the fair weather driving season. Get involved and take actions as risk managers and leaders to keep these Soldiers alive and well enough to enjoy their new toys and freedom to roam.

Thanks,
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Aviation Support Facility Hood (RW)
Fort Hood, TX
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Editor’s note: *Next month, we will feature a special edition of Flightfax on deployment safety.*

IIMC Mailbag

Training Increases Confidence

When I went through the crew coordination program back in 1992 at Fort Campbell, KY, I remember being upset at my instructor pilot (IP) for putting my UH-60 simulator in an IIMC situation at least six times per flight. I was really mad, because my poor performance embarrassed me. IIMC training wasn't part of the program, but my IP explained it was very important to do. He emphasized how crucial the crew's actions are during the first 30 seconds in an IIMC situation—that what you do in those few seconds will probably determine whether you live or die. So I sucked it up and looked stupid for several iterations. Over the next few days, though, it pretty much became instinctive.

Within a month or two we were doing a mission on Fort Campbell. The ceilings were extremely low and visibility was poor when it happened—we went IIMC. I was inside the cockpit, and the guy flying went in the clouds. He hadn't received the extensive training I had, and his instinct was to try to come back down through the clouds (as I had in my first simulator period). My *trained* instinct, on the other hand, was to go up. I took the controls—almost forcefully, but confidently—and started the recovery procedure. While my copilot was digging for pubs I was telling him which frequency to tune to, and within a minute or so we were on a vector. Everything was tuned and identified, and the cockpit was calm.

I truly believe the training that IP gave me saved my life that night. Train, train, train in the simulator, even if it's uncomfortable or embarrassing for your students. Take them out of their comfort zones and repeat IIMC scenarios until the procedure becomes routine and their confidence level climbs. Then, when their turn comes, they'll handle the first 30 seconds and the rest of the flight with complete confidence. ♦

—CW4 Dave Hennies is an Aviation Safety Officer assigned to HSC, 3rd MI Bn. He may be reached via e-mail at david.l.hennies@us.army.mil.

Safe, Not Sorry

I was the pilot in command (PC) on an OH-58A, with about 1,000 hours. My pilot had less than 500 hours. On this particular mission weather was reported with 4,000-foot ceilings. Well, the ceiling dropped to 200 feet. I knew we were far enough away from the local airport to climb, so we were VFR at 3,000 feet in no time. I knew the area well, but it was very unnerving to climb 2,500 feet with poor visibility.

On another flight at another time, I was the PC on a -58A and had about 1,500 hours when I went into a cloud over some mountains. It was the last quarter of a 16-hour duty day, and I was very tired. There was no light and no moon. I knew I had the altitude to clear the ridge line, but how far could I make it in IFR conditions? I decided to execute an immediate 180, and I resumed VFR flight. After returning to a civilian airport I checked into a nearby hotel. I was too tired to play games! ♦

—Anonymous

ACCIDENT BRIEFS

Information based on preliminary reports of aircraft accidents

CH-47

D Model

■ **Class B:** Aircraft was on the downwind leg of a traffic pattern flight with the instructor pilot performing a single engine failure training maneuver when the engine N_1 decreased below 60 percent and caused the operating engine temperature to over-temp above 1,200 degrees. The engine suffered Class B damage as a result.

■ **Class C:** Aircraft's aft rotor blades contacted the ground during troop insertion in mountainous terrain. A crewmember was guiding the crew into an aft landing when the blades contacted the ground. The crew immediately brought the aircraft to a hover and felt no unusual flight vibrations. The troops were dropped off at an alternate location, and the aircraft was returned to base without further incident. All three main rotor blades were damaged—one beyond repair, two repairable.

OH-58

D(R) Model

■ **Class A (Damage):** Aircraft was trail in a flight of two when its crew experienced engine out and low rotor RPM cockpit indications. The pilot in command initiated forced landing procedures and issued a "Mayday" call just before impact with the ground in a reported nose-high attitude. The aircraft came to rest on its left side. Both crewmembers suffered injuries and were extracted from the crashed aircraft by the lead aircraft's crew.

■ **Class A (Damage):** The crew experienced power loss during flight, followed by low rotor RPM and engine out indications. In response, the crew conducted an autorotation. The aircraft impacted an embankment and rolled several times before coming to rest at the edge of a waterway. A post-crash fire consumed the aircraft. Both crewmembers suffered minor injuries for which they were treated and released.

UH-60

A Model

■ **Class B:** Aircraft drifted into a hillside as the crew was slowing to a hover after entering a moderate rain shower. Damage was reported to all main and tail rotor blades and the stabilator.

RC-12

■ **Class C:** Aircraft was landing to a local airfield when a deer ran in front of it. The aircraft struck the deer, causing damage to the right propeller.

RQ-7

Shadow Model

■ **Class B:** Air vehicle crashed after control personnel lost communication with it. No other details were provided.

■ **Class B:** Air vehicle experienced generator and engine failure. The vehicle's crew deployed the onboard recovery chute, but the vehicle suffered damage after contacting the ground.

■ **Class C:** Air vehicle crashed into a HEMTT. The air vehicle experienced a right flap failure during landing, causing it to make repeated right rolls outside tolerance. After several failed landing attempts the operator deployed the chute, at which time the vehicle struck the HEMTT. Although the vehicle's fuselage was damaged, the payload is thought to be serviceable. The HEMTT suffered superficial damage.

Editor's note: **Information published in this section is based on preliminary mishap reports submitted by units and is subject to change. For more information on selected accident briefs, call DSN 558-9552 (334-255-9552) or DSN 558-3410 (334-255-3410).**

Flightfax Coming Attractions

- ***September***—**War Will Be Long and Hard...Make It Home Safe!**
- ***October***—**Non-rated Crewmember Special Issue & ALSE**
- ***November***—**Wire Strikes**
- ***December***—**2004 Wrap-Up**

U.S. Army Safety Center Phone Chart

(334) 255-xxxx (DSN 558)

Command Group

Commanding General 2029
Deputy Commander............... 3075
Executive Officer 9493
Sergeant Major...................... 3575
Aide-De-Camp 3819
Secretary.............................. 2029

Special Staff

JAG.................................... 2924
Flight Surgeon....................... 2763
Tech Advisor 1111
ARNG LNO 9864
USAR LNO............................. 1186
PAO 2919
Budget 2371
FOIA 2373
Secretary.............................. 2450

G1/4

CH, RMO 9132
Supply 1210

G3

Director................................. 2461
Dep Director.......................... 2801
CH, Operations Div 2194
CH, Aviation Div 9552
CH, Ground Div...................... 3562
CH, ORSA 1496
Secretary 2461
Duty Officer........................... 2660

G5

Director 3854
CH, Policy & Strategy 3367
Flightfax................................ 9855
Countermeasure.................... 2688

G6

Director 9280
CIO....................................... 3897
CH, Data Mngmt 3926
CH, Info Tech Div 3968
CH, Media & Market..... 3557/2062
Web Technology.................... 2098
Secretary............................... 2920
Help Desk 1390

G7

Director 1253
CH, RMI 2913
CH, PD Dev Div/CP12 1373
CH, ASO Tng 2376
Secretary............................... 3790

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